CLAIMS

We claim:

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- ★. A method of screening drug candidates comprising:
 - a) providing a cell that expresses an expression profile gene encoding BCO2 or fragment thereof;
 - b) adding a drug candidate to said cell; and
 - c) determining the effect of said drug candidate on the expression of said expression profile gene.
- 2. A method according to claim 1 wherein said determining comprises comparing the level of expression in the absence of said drug candidate to the level of expression in the presence of said drug candidate.
- 3. A method of screening for a bioactive agent capable of binding to BCO2 or a fragment thereof, said method comprising:
 - a) combining said BCO2 or a fragment thereof and a candidate bioactive agent;
 and
 - b) determining the binding of said candidate agent to said BCO2 or a fragment thereof.
- 4. A method for screening for a bioactive agent capable of modulating the activity of BCO2, said method comprising:
 - a) combining BCO2 and a candidate bioactive agent; and
 - b) determining the effect of said candidate agent on the bioactivity of BCO2.
- 5. A method of evaluating the effect of a candidate breast cancer drug comprising:
 - a) administering said drug to a patient;
 - b) removing a cell sample from said patient; and
 - c) determining the expression of a gene encoding BCO2 or fragment thereof.
- 6. A method according to claim 5 further comprising comparing said expression profile to an expression profile of a healthy individual.
- 7. A method of diagnosing breast cancer comprising:
 - a) determining the expression of a-gene encoding BCO2 or a fragment thereof in a first breast tissue of a first individual; and
 - b) comparing said expression of said gene(s) from a second normal breast tissue from said first individual or a second unaffected individual;

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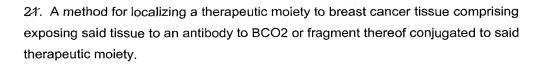
wherein a difference in said expression indicates that the first individual has breast cancer.

- 8. An antibody which specifically binds to BCO2 or a fragment thereof.
- 9. The antibody of Claim 8, wherein said antibody is a monoclonal antibody.
- 5 10. The antibody of Claim 8, wherein said antibody is a humanized antibody.
 - 11. The antibody of Claim 8, wherein said antibody is an antibody fragment.
 - 12. The antibody of Claim 8, wherein said antibody modulates the bioactivity of BCO2.
 - 13. The antibody of Claim 12, wherein said antibody is capable of inhibiting the bioactivity or neutralizing the effect of BCO2.
 - 14. A method for screening for a bioactive agent capable of interfering with the binding of BCO2 or a fragment thereof and an antibody which binds to BCO2 or fragment thereof, said method comprising:
 - a) combining BCO2 or fragment thereof, a candidate bioactive agent and an antibody which binds to BCO2 or fragment thereof; and
 - b) determining the binding of BCO2 or fragment thereof and said antibody.
 - 15. A method according to Claim 14, wherein said antibody is capable of inhibiting or neutralizing the bioactivity of BCO2.
 - 16. A method for inhibiting the activity of BCO2, said method comprising binding an inhibitor to BCO2.
- 20 17. A method according to claim 16 wherein said inhibitor is an antibody.
 - 18. A method of neutralizing the effect of BCO2 or a fragment thereof, comprising contacting an agent specific for said BCO2 or fragment thereof with said BCO2 or fragment thereof in an amount sufficient to effect neutralization.
 - 19. A method of treating breast cancer comprising administering to a patient an inhibitor of BCO2.
 - 20. A method according to claim 19 wherein said inhibitor is an antibody.

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- 22. The method of Claim 21, wherein said therapeutic moiety is a cytotoxic agent.
- 5 23. The method of Claim 21, wherein said therapeutic moiety is a radioisotope.
 - 24. A method of treating breast cancer comprising administering to an individual having said breast cancer an antibody to BCO2 or fragment thereof conjugated to a therapeutic moiety.
 - 25. The method of Claim 24, wherein said therapeutic moiety is a cytotoxic agent.
 - 26 The method of Claim 24, wherein said therapeutic moiety is a radioisotope.
 - 27. A method for inhibiting breast cancer in a cell, wherein said method comprises administering to a cell a composition comprising antisense molecules to a nucleic acid of figure 1.
 - 28. A biochip comprising one or more nucleic acid segments encoding BCO2 or a fragment thereof, wherein said biochip comprises fewer than 1000 nucleic acid probes.
 - 29. A method of eliciting an immune response in an individual, said method comprising administering to said individual a composition comprising BCO2 or a fragment thereof.
 - 30. A method of eliciting an immune response in an individual, said method comprising administering to said individual a composition comprising a nucleic acid encoding BCO2 or a fragment thereof.
 - 31. A method for determining the prognosis of an individual with breast cancer comprising determining the level of BCO2 in a sample, wherein a high level of BCO2 indicates a poor prognosis.